New witches´ broom QTL in the Sca 6 x ICS 1 F_2 population

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Witches´ broom disease (WBD) of cacao, caused by the basidiomicete *Moniliophthora perniciosa*, is one of the most important diseases of cacao, the chocolate tree (*Theobroma cacao* L.). The most viable and cost-effective alternative for the control of the disease is the use of resistance through the deployment of genetic materials with high productivity. In Bahia the main source of resistance has shown vulnerability to the fungal local strains, indicating that the fungus has overcome the Sca6 resistance. It has also been reported that the fungus is changing over time. This boom and bust cycle needs to be avoided by the breeder. However, plant breeders have had very limited success in developing resistant (R) cultivars. Molecular markers linked to genes for resistance to WBD may improve selection for this trait. The objective here was to test the QTL stability under artificial inoculations. One hundred and fifty individuals of the F_2 (Sca 6 x ICS 1) population were inoculated with the POPF2 inocula. POPF2 inocula were derived from brooms collected on the F_2 population. A drop of 20 µL of $2x10^5$ basidiósporos/mL was deposited at the apical meristem of each plant. After inoculation, the plants remained for 24 h in humid chamber, with temperatures around 25 ° C and 100% RH, afterwards they were transferred to the greenhouse until the end of the experiment. Symptoms were evaluated 60 days after the inoculation day, and mapping was performed with MapQTL v. 4.0. It was observed new putative QTLs, particularly in the linkage group 1 and 4, different from the one previously reported in the linkage group 9 detected previously. These results indicate a new region in the genome involved with WBD. This might be considered in the breeding program in search for new cacao lines with durable resistance.

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